Chapter 13 - Reports

Reports are a method of taking data stored in the various InRoads files and presenting it in a readable format.

Chapter Objectives:

- To describe where the data used to generate reports is stored.
- To present commonly used reports.
- To create various reports and use different report styles.
- To learn how to change the basic format of XML Reports.

Where Reports Come From

Command Generated Reports

Some reports are generated automatically as part of a command's execution. These are typically displayed in a Results window. An example of this type of report comes from processing a corridor in Roadway Designer.

Results			0	
Roadvay Designer Results Station: 203+80.28 Point Control Usage: Point Hode	Туре	Controlled by		Close Save As Append Display
LT_HMA_Lift1_EOP-TopVertical LT_HMA_Lift1_Laneline-TopVertical RT_HMA_Lift1_COP-TopVertical RT_HMA_Lift1_Laneline-TopVertical	Superelevation Superelevation Superelevation Superelevation	Sectionl IT_RMA_Liftl_Lameline-Top-IT_HMA_Liftl_EDP-Top Section HMA_Liftl_Centerline-Top-TT_HMA_Liftl_Lameline-Top Sectionl RT_MA_Liftl_Lameline-Top-RT_HMA_Liftl_EDP-Top Sectionl HMA_Liftl_Centerline-Top-RT_HMA_Liftl_Lameline-Top		Print Help
Station: 204+00.00 Point Control Usage: Point Mode IT_HMA_Lift1_EOP-TopVertical	Type Superelevation	Controlled by Section1 LT_HMA_Lift1_Lameline-Top-LT_HMA_Lift1_EOP-Top		
T_HMA_Lift1_EOP-TopVertical T_HMA_Lift1_Laneline-TopVertical Station: 204+25.00	Superelevation Superelevation	Section1 RT_BMA_Lift1_Laneline=Top=FT_HMA_Lift1_EDP=Top Section1 RMA_Lift1_Centerline=Top=RT_HMA_Lift1_Laneline=Top		
Coint Control Usage: Coint Mode	Туре	Controlled by		
LT_HMA_Lift1_EOP-TopVertical LT_HMA_Lift1_Laneline-TopVertical RT_HMA_Lift1_EOP-TopVertical RT_HMA_Lift1_Laneline-TopVertical	Superelevation Superelevation Superelevation Superelevation	Section1 LT_HNA_Lift1_Laneline-Top-LT_HNA_Lift1_EOP-Top Section1 HMA_Lift1_Centerline-Top-LT_HMA_Lift1_Laneline-Top Section1 RTMA_Lift1_Engeline-Top-RT_HMA_Lift1_EOP-Top Section1 HMA_Lift1_Centerline-Top-RT_HMA_Lift1_Laneline-Top		
Station: 204+50.00				
Point Control Usage: Point Node	Туре	Controlled by		
T_HMA_Lift1_EOP-TopVertical T_HMA_Lift1_Laneline-TopVertical RT_HMA_Lift1_EOP-TopVertical RT_HMA_Lift1_Laneline-TopVertical	Superelevation Superelevation Superelevation Superelevation	Section1 LT_HMA_Lift1_Laneline-Top-LT_HMA_Lift1_DOP-Top Section1 HMA_Lift1_Centerline-Top-LT_HMA_Lift1_Laneline-Top Section1 HMA_Lift1_Laneline-Top-RT_HMA_Lift1_DOP-Top Section1 HMA_Lift1_Centerline-Top-RT_HMA_Lift1_Laneline-Top	-	
4 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				

The data in the **Results** window can be saved by selecting the **Save As** button. The saved file is in Plain Text format and can be opened in **Notepad**, **Wordpad**, or **Word**. The data can also be printed by selecting the **Print** button.

Command generated reports are enabled/disabled by toggling on or off the *Report Lock*. The *Report Lock* is under **Tools > Lock** on the InRoads menu bar or on the button bar.

Bentley InRoads V8i (SELECTseries 2)		_		2	
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File Surface Geometry Drainage Eva	uation <u>M</u> odeler Dr <u>a</u> fting <u>Q</u> uantities	Tools	s <u>H</u> elp		
Geometry Projects	r Description Geometry Proj Description 12345DES_G SH 86 Design g E Default Image: Comparison of the second s		KML Reports KML Reports Tracking Named Symbology Manager Proference Manager Style Manager Copy Preferences Named Symbology Tools (ariable Manager	, , ,	
Converts penciled graphics to inked graph	ics	2 H	ighlight Al Pencil fighlight Al Ink Convert Pencil to Ink	J	
		1 2 4 1 1 1	jocks Drainage Run <u>M</u> acro	• • • •	Eeature Filter Feature Highlight Style Pencil/Pen
		₩ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Product Add-Ins Customize Options		Delete Ink Locate Point Spap
		2 8	Global Scale Factors Active Project Settings		Station
				~	Report
				~	Toobar

the format of command generated reports is set in the program and cannot be changed.

Review Reports

Review reports are generated by reviewing data (usually horizontal or vertical geometry). These are displayed by selecting **Geometry > Review Horizontal**, **Review Vertical** or **Review Geometry Point** from the InRoads menu bar or by **<R>** on the desired alignment and selecting **Review**.



The format of alignment review reports can be modified in a limited manner by selecting the *Mode*. The modes available for horizontal alignments are *Alignment*, *Element*, and *Curve Set*. The modes for Vertical alignments are *Alignment* and *Element*. The data displayed is based on the mode is as follows:

- Alignment Data pertaining to all elements of the alignment is displayed.
- *Element* Data pertaining to a single element of the alignment is displayed. Element data is accessed using the *First*, *Last*, *Next*, and *Previous* buttons in the report dialog box.
- *Curve Set* –Data pertaining to all of the arc elements is displayed.

Geometry Project: 12345DES_Geometry Mode Cose Project Name: SH 86 Curve Sets @ Algoment Bement Save As Project Name: 1245DES_Geometry Description: SH 86 Save As Horizontal Alignment Name: SH 86 Description: SH 86 Description: Station Bescription: SH 86 Centerline Style: ALG_PRO Display Element: Circular STATION NORTHING EASTING E PC (203+80.28 1556706.07 3277567.49 Project Name: Station CC (203+87.30 1556704.22 3277570.88 Select Project Name: Select PT (203+87.30 1556704.22 3277574.27 Redius: Select Project Name: Proj	Review Horizontal Alignment	
Project Name: 12345DES_Geometry Description: SH 86 Design geometry Horizontal Alignment Name: SH 86 Description: SH 86 Centerline Style: ALG_FRO Display PC STATION NORTHING EASTING Element: Circular PC (PT (CC () 203+80.28 1556706.07 3277567.49 PT (CC () 203+80.28 1556705.14 3277574.27 PT (Description: 203+87.30 1556704.22 3277574.27 Radius: 30000.00 Delta: 0^00'48'' Right Degree of Curvature(Arc): 0^11'28'' Length: 7.02 Tangent: 3.51 Chord: 7.02 Middle Ordinate: 0.00 External: 0.00 External: 0.00 External: 0.00 Endial Direction: S 15^13'53'' U Last Radial Direction: S 15^13'53'' U Last Tangent Direction: S 74*45'19'' E 223+87.30 1556704.22 3277574.27 PT (Chord Direction: S 74*45'19'' E 74*45'19'' E 74*45'19'' E 1555971.14 3280264.16	Geometry Project: 12345DES_Geometr Horizontal Alignment: SH 86 SH 86 Gurve Sets Alignment Bement	Close Save As
Element: Linear PT () 203+87.30 1556704.22 3277574.27 PC () 231+75.30 1555971.14 3280264.16 Tangent Direction: S 74^45'19" E	Project Name: 12345DES_Geometry Description: SH 86 Design geometry Horizontal Alignment Name: SH 86 Description: SH 86 Centerline Style: ALG_PRO STATION NORTHING Element: Circular PC 203+80.28 DESCRIPTION: SH 86 CC 203+80.79 DESCRIPTION: SH 86 CC 1527759.88 PT 203+87.30 Delta: 0^00'48' Radius: 3000.00 Delta: 0^00'48' Correction 7.02 Tangent: 3.51 Chord: 7.02 Middle Ordinate: 0.00 External: 0.00 External: 515'13'53'' W Chord Direction: S14'45'19'' E Radial Direction: S14'5'19'' E	Append Display Print Help Select First <previous next=""> Last</previous>
• •	Element: Linear PT () 203+87.30 1556704.22 3277574.27 PC () 231+75.30 1555971.14 3280264.16 Tangent Direction: S 74^45'19" E	-

The data in the **Review** window can be saved by selecting the **Save As** button. The saved file is in plain text (TXT) format and can be opened in **Notepad**, **Wordpad**, or **Word**. The data can also be printed by selecting the **Print** button.

XML Reports

With the exception of the End Area Volume report, which is created from the command's dialog box, XML reports are accessed from **Tools > XML Reports** from the InRoads menu bar.

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<unnamed> +</unnamed>	10	🛎 🚳 🔪 🎘		5+00	E	XML Reports	Geometry
	=	Name	Туре		Description	View XML Reports	Station Base
Coop Buffer		≝ Difference ≝SH 86 V	Vertical /	Align Align	SH 86 Vert	Hamed Symbology Manager. Preference Manager Style Manager	······································
Surfaces 📇 Geometry 4	s bet	veen a surface ar	id a set of	cogo poi	nts	Highlight All Pencil Highlight All Ink Convert Pencil to Ink	 Intersecting Alignment Stations Point Validation Surfaces
						Locks	, 🤹 Surface Check

The reports are displayed in the Bentley InRoads Report Browser. XML Style Sheets are used to format the data. The report format is changed by selecting the desired style sheet from the style sheet list on the left side of the dialog box.



Commonly Used Reports

There are many reports and formats that can be generated from InRoads. Some of the more common reports used by CDOT are described in this section.

End Area Volume Reports

The End Area Volume report presents data generated by InRoads in a tabular format. This report is generated from the *End Area Volumes* command. A set of cross sections with an existing surface and a design surface is required to create this report. Create an End Area Volume report using the following steps:

- 1. Select Evaluation > Cross Section > Cross Sections from the InRoads menu bar.
- 2. Select End-Area Volumes > General from the dialog box explorer.

3. Toggle on Create XML Report.

oss Section Set:	Surface	Туре	Method		
H 86 + +	 ✓ 12345 existing ✓ 12345DES 	Existing Design	 Standard Correct for 	Curvature	
General Unsuitable Materials by Feature Unsuitable Materials by Station			Station Limits	n Limits	
Classifications Compaction/Expansion			Start Station	203+80.28	+ +
			Stop Station:	203+80.28	+ +
As Built Annotation	Imperial Units © Cubic Yards (V Create XML Report	Cubic Feet	Ignore Areas Sr	naller Than: 0.0()
Annotation	Create XML Report		ignore Areas or	naler man. 0.00	

- 4. Make the other settings in the End Area Volumes dialog box as desired. These options are explained in *Chapter 12 -Volumes and Mass Haul Diagram*.
- 5. **<D> Apply**. The *Bentley InRoads Report Browser* is displayed.
- 6. Select the desired style sheet from the **Evaluation** folder.



The following style sheets are used with the End Area Volume report:

♦ BasicEndAreaVolumeBalanceStation.xsl – This style sheet shows calculated and adjusted areas and volumes, a grand total, and highlights balanced stations.

		· · · · ·		Station C	uantities				
Baseline		ii.	. Cut		· · · ·	A.,	- Fill		Mass
Station	Factor	Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Ordinate
224+00.00	1.00	0.00	0.00	0.00	1.00	305.99	1290.31	1290.31	1073.18
225+00.00	1.00	0.00	0.00	0.00	1.00	116.51	782.40	782.40	290.78
226+00.00	1.00	24.20	44.81	44.81	1.00	48.26	305.13	305.13	30.46
226+19.70	XX		<u>XX</u>		XX		ά. X		0.00
227+00.00	1.00	9.86	63.07	63.07	1.00	69.29	217.69	217.69	-124.16
228+00.00	1.00	11.99	40.47	40.47	1.00	59.80	239.06	239.06	-322.75

• **BasicVolume.xsl** - This style sheet shows calculated and adjusted areas and volumes and a grand total.

Station Fact	.XX				Mass			
	or Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Ordinate
258+00.00 1	1.00 148.3	670.37	670.37	1.00	9.26	19.71	19,71	6451.93
259+00.00 1	1.00 144.8	542.91	542.91	1.00	10.28	36.19	36.19	6958.65
260+00.00 1	1.00 163.7	9 571.56	571.56	1.00	10.43	38.35	38.35	7491.87
260+43.16 1	1.00 163.7	5 261.80	261.80	1.00	12.51	18.34	18.34	7735.33

- EndAreaVolume.xsl This style sheet displays the same information as the BasicEndAreaVolumeBalanceStation.xsl style sheet with added quantities information for cut and fill included.
- EndAreaVolumePageTotals.xsl This style sheet shows calculated and adjusted areas and volumes, Added Quantities volumes, a grand total, and page totals

	< Y-			- Station C	uantitie	s	.yy.i	÷Υ	¥	<u>ұұ.</u> .	- Added Q	uantitie	ş	.yy	
Baseline			Cut		\sim	×,	Fill		<u></u>	Cut -	<u>,</u>)	<u></u>	Fill -		Mass
Station	Factor	Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Factor	Volume	Adjusted	Factor	Volume	Adjusted	Ordinate
256+00.00	1.00	332.21	1224.21	1224.21	1.00	0.00	0.04	0.04	1.00	0.00	0.00	1.00	0.00	0.00	4792.9
257+00.00	1.00	213.68	1010.92	1010.92	1.00	1.38	2.56	2.56	1.00	0.00	0.00	1.00	0.00	0.00	5801.2
258+00.00	1.00	148.32	670.37	670.37	1.00	9.26	19.71	19.71	1.00	0.00	0.00	1.00	0.00	0.00	6451.9
259+00.00	1.00	144.85	542.91	542.91	1.00	10.28	36.19	36.19	1.00	0.00	0.00	1.00	0.00	0.00	6958.6
260+00.00	1.00	163.79	571.56	571.56	1.00	10.43	38.35	38.35	1.00	0.00	0.00	1.00	0.00	0.00	7491.8
260+43.16	1.00	163.75	261.80	261.80	1.00	12.51	18.34	18.34	1.00	0.00	0.00	1.00	0.00	0.00	7735.3
Pa	ge Total:	X	4281.77	4281.77	XX	X	115.18	115.18	X	0.00	0.00	\sum	0.00	0.00	XX
Gra	nd Total:	X	22907.09	22907.09	XX	X	15171.76	15171.76	X	0.00	0.00	\sum	0.00	0.00	XX

 EndAreaVolumeStationRange.xsl - This style sheet shows calculated and adjusted areas and volumes, Added Quantities volumes, and Station Range Totals. The station range is set to 700 feet.

Baseline	الرجية	بكريها	Cut	يمريهم	ليبيذر	A., A	Fill	بلبيل	رئىيىد. ¢	ut	, <u>م</u> بيد ا	يديد ال	Mass
Station	Factor	Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Volume	Adjusted	Volume	Adjusted	Ordinate
203+80.28	1.00	177.19	0.00	0.00	1.00	7.01	0.00	0.00	0.00	0.00	0.00	0.00	0.0
204+00.00	1.00	175.71	128.86	128.86	1.00	7.03	5.12	5.12	0.00	0.00	0.00	0.00	123.73
205+00.00	<u>_1.00</u>	165.36	631.61	631.61	<u>_1.00</u>	8.79	29.29	29.29	0.00	0.00	0.00	Á (Ö.00	726.0
206+00.00	1.00	156.50	596.04	596.04	1.00	16.77	47.33	47.33	0.00	0.00	0.00	0.00	1274.76
207+00.00	1.00	160.17	586.42	586.42	1.00	35.36	96.53	96.53	0.00	0.00	0.00	0.00	1764.68
208+00.00	1.00	154.51	582.73	582.73	1.00	33.00	126.59	126.59	0.00	0.00	0.00	0.00	2220.79
209+00.00	1.00	146.44	557.31	557.31	1.00	62.39	176.65	176.65	0.00	0.00	0.00	0.00	2601.40
210+00.00	1.00	185.74	615.16	615.16	1.00	9.96	133.97	133.97	0.00	0.00	0.00	0.00	3082.64

- MultipleMaterialVolumes.xsl This style sheet shows calculated and adjusted areas and volumes. It also calculates quantities for existing substrata surfaces.
- Volumes.xsl This style sheet shows calculated and adjusted areas and volumes and the areas and volumes for component materials and unsuitable material.

Station Typ	e	Area	Volume	Factor	Adjusted Volume	Included in Mass Ordinate?	Mass Ordinate
204+00.00							57.95
Normal	Cut:	113.17	83.31	1.00	83.31	Yes	
Normal	Fill:	7.03	5.12	1.00	5.12	Yes	
Added	Cut:		0.00	1.00	0.00	Yes	
Added	Fill:		0.00	1.00	0.00	Yes	
Default (replace	:ed):	27.27	20.23	1.00	20.23	Yes	
Default (not replace	ed):	62.54	45.55	1.00	45.55	No	
Total Def	ault:	89.81	65.79	1.00	65.79		
D SUBBA	SE:	108.00	78.87	1.00	78.87	No	
D HMA P	vmt:	36.75	26.84	1.00	26.84	No	
D ABC Clas	s 6:	27.00	19.72	1.00	19.72	No	

Station Base and Station Offset Reports

These reports are used to calculate the offset distance between two horizontal alignments, a horizontal alignment and a surface feature, or two surface features. They operate in a similar manner. They both measure from the alignment or feature selected on the General leaf (in the From area) to the specified alignment or feature. Measurements are made perpendicular to the "From" alignment or feature. Stationing for the Station Base report is controlled by the "From" alignment or feature. The specified alignment or feature (identified on the Horizontal Alignments and Features leaves) control stationing for Station Offset reports.

The Station Base and Station Offset Reports are useful in determining gore stations and distances to the right of way. To create a Station Base or Station Offset report (the station base report is used in this example) follow the steps below:

1. Select **Tools > XML Reports > Station Base** from the InRoads menu bar.

Bentley InRoads V8i (SELECTseries 2) File Surface Geometry Drainage Eva	luation <u>M</u> odeler Sit	te Modeler Dr <u>a</u> fting	Quantities			
<unnamed> 👻 🚡</unnamed>	🗟 💊 🏏	関 🙀 🦟 🥐	Ē	XML Reports		Geometry
	Name	Туре	Descriptio	View XML Reports	1	Station Base
Geometry Projects ▲ Cope Buffer ■ Cope Buffer ■	🚾 Difference 🛃 SH 86 V	Vertical Align Vertical Align	SH 86 Vert	Tracking Tracking Namader	S and and and and] Station Qffset] Qearance] Stakeout] Legal Qescription
Surfaces 📇 Geometry ()	< III			Highlight All Pencil Highlight All Ink Gonvert Pencil to Ink		j men crieck Intersecting Alignment Stations Point Validation Surfaces Surface Check

2. On the *General* leaf of the *Station Base Report* dialog box, select the desired Horizontal Alignment. In this example SH 86 is used.

Station Base Report → General Include	From Horizon	ntal Alignment:	SH 86	•		
	O Surfac	e:	123450			
Features	Feature	B1	12345DES-HMA_Lift1_Centerlin v			
	Limts					
	Start:	203+80.28		+ -		
	Stop:	260+43.16		+		

- 3. Select the **Include** leaf.
- 4. In the *Horizontal Points* area, toggle on **On-Alignment**.
- 5. Toggle on Interval.

6. In the *Interval* field, key in *100*.

Station Base Report	Harizontal Points	
Honzontal Alignments Features	Vertical Points On-Alignment Event	
	V Interval: 100.00	
	E Offset 50.00 +	
	Cardinal Points of Selected Alignments/Feature	ires
	Apply Preferences Clos	e Help

- 7. Select the Horizontal Alignments leaf.
- 8. In the *Include* field, key in the desired *alignment name* (*Off Ramp* in this example) and press the Tab key.
- 9. **<D> Apply**. This displays the *Bentley InRoads Report Browser*.

Station Base Report General	Selected:	Ramp		Fiter.
Horizontal Alignments	Name	Description	Style	
Teatures	Off Ramp		ALG_PRO	

10. In the *Bentley InRoads Report Browser*, select the **StationBaseSingle.xsl** from the *StationOffset* folder in the left pane.



11. Review the report in the left pane.

		Station Bas	e Report		
		Report Created: Time: 1:1	4/1/2009 3pm		
	Project:	12345DES_Geometry			
	Description:	SH 86 Design geometry			
Baseline (Active) Alignment: SH 86					
	File Name:	C:\Projects\12345\Design\InR	oads\12345DES_0	Beometry alg	
	Last Revised:	cferree 4/1/2009 11:19:47 AM			
	Input Grid Factor:	1.00000000	Note: All units in	this report are in feet unless	specified otherwise.
<u>A</u> <u>A</u> <u>A</u>	Baseline Alignme	nt		Offset Alignme	nt
Station	Distance to Offset Point	Radial Direction	Station	Distance to Offset Point	Radial Direction
ffset (Specified)	Alignment: Off Ramp				
205+00.00	0.00	S 15°14'41" W	1+00.00	24.00	S 15°14'41" W
206+00.00	0.00	S 15°14'41" W	2+00.00	24.00	S 15°14'41" V
207+00.00	0.00	S 15°14'41" W	3+00.00	24.00	S 15°14'41" V
208+00.00	0.00	S 15°14'41" W	4+00.00	24.00	S 15°14'41" V
209+00.00	0.00	S 15°14'41" W	5+00.00	24.00	S 15°14'41" V
010.00.00	0.00	S 15°14'41" W	6+00.00	24.00	S 15"14'41" V
210+00.00			7.00.00	01.00	O 45244'44" W
210+00.00	0.00	S 15*14'41" W	7+00.00	24.00	5 15 1441 V

The important columns are:

- Column 1 This is the station on the "From" alignment. This is where the measurement originates.
- Column 4 This is the station on the alignment selected on the Horizontal Alignments leaf. It is the point measured to.
- Column 5 This is the distance measured.

Other style sheets that are used with the Station Base and Station Offset reports are:

♦ StationBaseCoordinates.xsl – This style sheet displays the "From" alignment station, the offset distance, and the X, Y, and Z coordinates of the specified alignment. The Z coordinate is the specified alignment's vertical alignment.

Active Alignment	Perpendicular Distance from Active Alignment to Specified Alignment (Off Pamp)	Specified Alignment Coordinates (SH 86 V)				
(SH 86) Station	Offset is 0.00	X	<u> </u>	z		
205+00.00	24.00	3277676.688520	1556651.432611	6600.0000		
206+00.00	24.00	3277773.169669	1556625.138358	6600.0000		
207+00.00	24.00	3277869.650819	1556598.844106	6600.0000		
208+00.00	24.00	3277966.131969	1556572.549853	6600.0000		
209+00.00	24.00	3278062.613119	1556546.255600	6600.0000		
210+00.00	24.00	3278159.094269	1556519.961348	6600.0000		

- **Note:** The vertical alignment listed under *Specified Alignment Coordinates* is the the child of the *Active Alignment*. The data in the Z column comes from the vertical alignment attached to the *Specified Alignment*.
- ◆ StationBaseVerticalClearance.xsl This style sheet displays the "From" alignment station, the offset distance, and the elevation difference between the "From" vertical alignment and the specified vertical alignment. This report is useful when defining vertical alignments for merging alignments.

Active Alignment Station (SH 86)	Perpendicular Distance from Active Alignment to Specified Alignment Offset is 0.00 (Off Ramp)	Vertical Clearance to Off Ramp
205+00.00	24.00	32.7657
205+50.00	24.00	32.6232
206+00.00	24.00	32.4808
206+50.00	24.00	32.3383
207+00.00	24.00	32.1959
207+50.00	24.00	32.0535
208+00.00	24.00	31.9110
208+50.00	24.00	31.7686

Geometry Reports

A geometry report can be used with a large number of style sheets to produce legal descriptions, calculate areas, and review alignment data. These reports can be generated for a single alignment or multiple alignments. To create a geometry report:

- 1. Select **Tools > XML Reports > Geometry** from the InRoads menu bar. This displays the Geometry Reports dialog box.
- 2. In the *Include* field of the *Horizontal Alignments* area, key in the desired *alignment name*. An "*" can be used to select all of the alignments in the geometry project.
- 3. In the *Include* field of the *Cogo Points* area, key in the desired *point name*. An "*" can be used to select all of the cogo points in the geometry project.
- 4. Toggle on Include Vertical Alignments, if desired.
- 5. Toggle on Include Vertical Event Points, if desired.

- 6. Toggle on Include Horizontal Event Points, if desired.
- 7. Toggle on **Interval** and key in a value, if desired. With the Interval toggled off, data is collected at alignment cardinal points only. When the Interval is toggled on, data is collected at the interval along the alignment and at the cardinal points.
- 8. **<D> Apply** to create the report. The *Bentley InRoads Report Browser* is displayed.

Most of the style sheets in the Geometry and CDOT folders can be used with geometry reports. Some useful style sheets are shown in the illustration below as they appear in the style sheet explorer.



Examples of the style sheets highlighted above are shown here. These are by no means the only style sheets that should be used. They are, however, representative of the type of geometry report formats.

			Area R	epon		
			Report Create Time: 7	: 4/8/2009 48am		
	Project:	12345DES_Geometry	y XXX			
	Description:	SH 86 Design geome	etry			
	File Name:	C:\Projects\12345\De	esign\InRoads\123	5DES_Geometry.alg		
ЛŇ	ast Revised:	cferree 4/8/2009 7:47	7:23 AM			
Inp	out Grid Factor:	1.0000000		Note: All units in this repo	rt are in feet unless spe	cified otherwise.

• **Area.xsl** – This style sheet displays the area in square feet, the area in acres, and the length of the perimeter for closed alignments.

Report Created: 4/8/2009 Time: 8:46am								
Project: 12345	DES_Geometry							
Description: SH 86	Design geometry							
File Name: C:\Proj	ects\12345\Design\InRoads\1	2345DES_Geometry.alg						
Last Revised: cferree	4/8/2009 7:47:57 AM							
Input Grid Factor: 1.00000	000	Note: All units in this repo	rt are in feet unless specified otherwise.					
Horizontal Alianmont:	Off Pamp							
Horizontal Description:								
Horizontal Style	ALG PRO							
	Station	Northing	Easting					
	X X X X X	$X \times X X $	(XXXXX)					
Element: Linear								
POB ()) 1+00.00	1556651.432611	3277676.688520					
) 7+03.23	1556492.817221	3278258.693853					
Tangential Direction	S 74°45'19" E							
Tangential Length	603.23							
Element: Circular								
	7+03 ^.		17pr/					
	0 52947929							
Chord Direction:	5 53"17 33 E							
Tangont Direction:	S 50 10 13 W							
rangent Direction.	3 31 4341 E							
Vertical Alignment:	Off Ramp							
Vertical Description:								
Vertical Style:	ALG_EXISTING							
	Station	Elevation						
Element: Linear								
РОВ	1+00.00	6600.0000						
X X X POE	15+00.00	6600.0000						
Tangent Grade:	\times \times \times \times \wedge 0.00%							
rangent Grade.								

 HorizontalAndVerticalAlignmentReview.xsl - This style sheet displays information on all selected horizontal and vertical alignments. The format is the same as the geometry Review Reports (show previously). This report lists the data for the horizontal alignment followed by the data for its vertical alignments.

	LIST COO	rdinates with Stat	ion Report	
		Report Created: 4/8/2009		
		Time: 8:59am		
Project: 1234	5DES_Geometry			
Description: SH 8	6 Design geometry			
File Name: C:\P	rojects\12345\Design	VinRoads\12345DES_Geome	try.alg	
Last Revised: cferr	ee 4/8/2009 7:47:57 A	AM A A A A A A A A A A A A A A A A A A		
nput Grid Factor: 1.000	00000	Note: All uni	its in this report are in feet unle	ss specified otherwis
Alignment Name:	SH 86			
Alignment Name: Station	SH 86 Point Type	Easting (X)	Northing (Y)	Elevation (Z)
Alignment Name: Station 203+80.28	SH 86 Point Type PC	Easting (X) 3277567.493605	Northing (Y) 1556706.066252	Elevation (Z) 6633.1067
Alignment Name: Station 203+80.28 203+87.30	SH 86 Point Type PC PT	Easting (X) 3277567.493605 3277574.265918	Northing (Y) 1556706.066252 1556704.221427	Elevation (Z) 6633.1067 6633.0867
Alignment Name: Station 203+80.28 203+87.30 204+00.00	SH 86 Point Type PC PT S+0 EVT	Easting (X) 3277567.493605 3277574.265918 3277586.517990	Northing (Y) 1556706.066252 1556704.221427 1556700.882339	Elevation (Z) 6633.1067 6633.0867 6633.0505
Alignment Name: Station 203+80.28 203+87.30 204+00.00 204+49.33	SH 86 Point Type PC PT S+0 EVT S+0 EVT S+0 EVT	Easting (X) 3277567.493605 3277574.265918 3277586.517990 3277634.108041	Northing (Y) 1556706.066252 1556704.221427 1556700.882339 1556687.912502	Elevation (Z) 6633.1067 6633.0867 6633.0505 0.0000
Alignment Name: Station 203+80.28 203+87.30 204+00.00 204+49.33 204+50.00	SH 86 Point Type PC PT S+0 EVT S+0 EVT S+0 EVT S+0 EVT	Easting (X) 3277567.493605 3277574.265918 3277586.517990 3277634.108041 3277634.758565	Northing (Y) 1556706.066252 1556704.221427 1556700.882339 1556687.912502 1556687.735213	Elevation (Z) 6633.1067 6633.0867 6633.0505 0.0000 6632.9081
Alignment Name: Station 203+80.28 203+87.30 204+00.00 204+49.33 204+50.00 205+00.00	SH 86 Point Type PC PT S+0 EVT S+0 EVT S+0 EVT S+0 EVT S+0 EVT	Easting (X) 3277567.493605 3277574.265918 3277586.517990 3277634.108041 3277634.758565 3277682.999140	Northing (Y) 1556706.066252 1556704.221427 1556700.882339 1556687.912502 1556687.735213 1556674.588087	Elevation (Z) 6633.1067 6633.0867 6633.0505 0.0000 6632.9081 6632.7657
Alignment Name: Station 203+80.28 203+87.30 204+00.00 204+49.33 204+50.00 205+00.00 205+50.00	SH 86 Point Type PC PT S+0 EVT S+0 EVT S+0 EVT S+0 EVT S+0 EVT S+0 EVT S+0 EVT S+0 EVT	Easting (X) 3277567.493605 3277574.265918 3277586.517990 3277634.108041 3277634.758565 3277682.999140 3277731.239715	Northing (Y) 1556706.066252 1556704.221427 1556700.882339 1556687.912502 1556687.735213 15566674.588087 1556661.440960	Elevation (2) 6633.1067 6633.0867 6633.0505 0.0000 6632.9081 6632.7657 6632.6232

♦ ListCoordinatesStation.xsl - This style sheet displays the X, Y, and Z values along the selected alignment at the specified interval. The Z coordinate comes from the vertical alignment.



 CDOT Permanent Easement Description.xsl - This style sheet was designed specifically for CDOT. It displays the alignment in the proper format for a permanent easement. This report is meant to be saved as a text file and completed in Word.

Formatting XML Reports

When viewing a Command or Review report, things like precision, station format, and slope format must be set prior to creating the report. With XML reports, data formatting can be changed after the report is generated.

To change the data format in an XML report:

- 1. Create the desired report as described above.
- 2. In the *Bentley InRoads Report Browser*, select Tools > Format Options from the menu bar.



3. In the *Format Options* dialog box, make the desired changes using the drop down menus. Changes appear in the report as they are made. The illustration below shows the various options available.

Format Options						
Northing/Easting:	Mode		Precision	•	Format	Close
Elevation:			0.1234	•		Help
Angular:	Degrees	•	0	•	ddd^mm'ss.s" ▾ □ In	clude Angular Suffix
Slope:			0.12	•	50% 💌	
Use Alternate Slope if	Slope Exceeds:		0.00%			
Alternate Slope:			0	•	2.0:1 💌	
Linear:			0.12	•		
Station:			0.12	•	SS+SS.SS 💌	
Acres/Hectares:			0.1234	•		
Area Units:			0.12	•		
Cubic Units:			0.12	•	Convert to Cubic Yard	s
Direction:	Bearings	•	0	•	ddd^mm'ss.s" 💌	
Face:	Right Face	•				
Vertical Observation:	Zenith	•				

4. **<D> Close** to dismiss the Format Options dialog box.

Chapter Summary:

- Reports come from executing a command (like processing Roadway Designer), reviewing geometry, or creating XML reports.
- Some commonly used reports are End Area Volumes, Station Base and Station Offset, and Geometry reports.
- Using the Format Options with the Bentley InRoads Report Browser allows you to make minor changes to the format of the generated report.